# Course: Project Semester 4 credits: 6

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| **Course code** | ELVH17GPRJ4 |
| **Name** | Project Semester 4 |
| **Study year** | 2022-2023 |
| **ECTS credits** | 6 |
| **Language** | Dutch, with parts in English |
| **Coordinator** | J. Zijlstra |
| **Modes of delivery** | Project-based learning |
| **Assessments** | Project Semester 4 - Assignment |

**Learning outcomes**

- Student describes goal, problem statement, context and formal requirements for a project in a controlled industrial environment
- Student translates the specifications of the analysis into functional descriptions in a systematic way
- Student selects and motivates the best functional description for a complex product
- Student demonstrates the feasibility of the design by means of a working proof of concept
- Student justifies choices and reflects critically on these choices during the development of the project
- Student reflects on own actions, thoughts, outcomes and adjusts own actions accordingly
- Student informs the client on the progress of the project on a weekly basis
- Student advises the contractor on how to best implement the outcome of the project
- Student evaluates the degree in which the proof of concept meets the goal and solves the problem statement

**Content**

- Task 1: Together with all groups agree on a protocol that can be used in task 5. (LOs: 2, 3 and 5)
- Task 2: Build and demonstrate a robot that can navigate through an unknown maze and is able to navigate to a specific position.
- Task 3: Build and demonstrate a system that finds and indicates the location of a sound source using two microphones. Integrate this system with your robot. The robot should orient itself to the direction of the sound source.
- Task 4: Find signals in a noisy time series using digital filters. Keep a journal in which you register how you analysed your time series. You need to present a subset in class.
- Task 5: Each group should build a robot that can communicate with the robots of the other groups and is capable of locating a sound and navigation. Use the protocol designed in Task 1. During the demonstration all groups are paired in a random order. Each robot will start on a different location, find the other robot and together navigate to an end position. All robots should write their movements to a database. Write a report in which you explain and defend all your choices.

**Included in programme(s)**

Electrical Engineering Major Electronics
Electrical Engineering Major Mechatronics

**School(s)**

Institute of Engineering

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